

Claims

1. A monoclonal antibody which recognizes a human telomerase catalytic subunit.
2. A monoclonal antibody according to claim 1, wherein said monoclonal antibody is obtainable by immunizing an animal with a partial peptide of the human telomerase catalytic subunit, the partial peptide having an amino acid sequence designated as one of SEQ ID NOs: 1, 2, 3, and 6.
3. A monoclonal antibody according to claim 1, wherein said monoclonal antibody reacts specifically with the amino acid sequence of the human telomerase catalytic subunit, the sequence being designated as one of SEQ ID NOs: 1, 2, 3, and 6.
4. A monoclonal antibody according to one of claims 1 to 3, wherein said monoclonal antibody is selected from the group consisting of monoclonal antibodies KM 2311, KM2582, KM2590, KM2591, and KM2604.
5. A hybridoma which produces the monoclonal antibody according to one of claims 1 to 3.
6. A hybridoma according to claim 5, wherein said hybridoma is selected from the group consisting of KM 2311 (FERM BP-6306), KM2582 (FERM BP-6663), KM2590 (FERM BP-6683), KM2591(FERM BP-6684), and KM2604 (FERM BP-6664).
7. A monoclonal antibody according to one of claims 1 to 3, wherein said monoclonal antibody is a genetic recombinant antibody.
8. A monoclonal antibody according to claim 7, wherein said genetic recombinant antibody is selected from the group consisting of a humanized antibody and an antibody fragment.
9. A monoclonal antibody according to claim 8, wherein said humanized antibody is a human chimeric antibody.

10. A human chimeric antibody comprising an antibody heavy chain (H chain) variable region (V region) and an antibody light chain (L chain) V region of the monoclonal antibody according to Claim 1, and H chain constant region (C region) and L chain C region of a human antibody.
11. A human chimeric antibody according to claim 10, wherein amino acid sequences of said H chain V region and L chain V region have the same amino acid sequences as amino acid sequences of an H chain V region and an L chain V region of a monoclonal antibody selected from the group consisting of monoclonal antibodies KM 2311, KM2582, KM2590, KM2591, and KM2604.
12. A monoclonal antibody according to claim 8, wherein said humanized antibody is CDR (complementary determining region) grafted antibody.
13. A CDR grafted antibody comprising V region complementary determining regions of H chain and L chain of the monoclonal antibody according to claim 1, and C region and V region framework regions of an H chain and an L chain of a human antibody.
14. A CDR grafted antibody according to claim 13, wherein amino acid sequences of said complementary determining regions of the H chain V region and L chain V region have the same amino acid sequences as amino acid sequence of complementary determining regions of an H chain V region and L chain V region of a monoclonal antibody which is selected from the group consisting of monoclonal antibodies KM 2311, KM2582, KM2590, KM2591, and KM2604.
15. A monoclonal antibody according to claim 8, wherein said antibody fragment is an antibody selected from the group consisting of Fab, Fab', F(ab')₂, a single chain antibody, and disulfide stabilized Fv.
16. A single chain antibody comprising an H chain V region and an L chain V region of the monoclonal antibody according to claim 1.

17. A single chain antibody according to claim 16, wherein amino acid sequences of an H chain V region and an L chain V region of said single chain antibody have the same amino acid sequences as amino acid sequence of an H chain V region and an L chain V region of a monoclonal antibody which recognizes the human telomerase catalytic subunit.
18. A single chain antibody according to claim 17, wherein amino acid sequences of an H chain V region and an L chain V region of said single chain antibody have the same amino acid sequences as amino acid sequence of an H chain V region and an L chain V region of a monoclonal antibody which is selected from the group consisting of monoclonal antibodies KM 2311, KM2582, KM2590, KM2591, and KM2604.
19. A single chain antibody according to claim 16, wherein amino acid sequences of an H chain V-region and an L chain V-region of said single chain antibody have the same amino acid sequences as amino acid sequences of complementary determining regions of an H chain V region and an L chain V region of a monoclonal antibody which recognizes the human telomerase catalytic subunit.
20. A single chain antibody according to claim 19, wherein amino acid sequences of an H chain V region and an L chain V region of said single chain antibody have the same amino acid sequence as amino acid sequences of complementary determining regions of an H chain V region and an L chain V region of a monoclonal antibody which is selected from the group consisting of monoclonal antibodies KM 2311, KM2582, KM2590, KM2591, and KM2604.
21. A disulfide stabilized antibody comprising H chain V region and L chain V region of monoclonal antibody according to claim 1.
22. A disulfide stabilized antibody according to claim 21, wherein amino acid sequences of an H chain V region and an L chain V region of said disulfide stabilized antibody have the same amino acid sequences as amino acid sequence of an H chain V region and an L chain V region of a monoclonal antibody which recognizes the human telomerase catalytic subunit.

23. A disulfide stabilized antibody according to claim 22, wherein amino acid sequences of an H chain V region and an L chain V region of said disulfide stabilized antibody have the same amino acid sequence as amino acid sequences of an H chain V region and an L chain V region of a monoclonal antibody which is selected from the group consisting of monoclonal antibodies KM 2311, KM2582, KM2590, KM2591, and KM2604.

24. A disulfide stabilized antibody according to claim 21, wherein amino acid sequences of an H chain V region and an L chain V region of said disulfide stabilized antibody have the same amino acid sequence as amino acid sequences of complementary determining regions of an H chain V region and an L chain V region of a monoclonal antibody which recognizes the human telomerase catalytic subunit.

~~25.~~ A disulfide stabilized antibody according to claim 24, wherein amino acid sequences of an H chain V region and an L chain V region of said disulfide stabilized antibody have the same amino acid sequence as amino acid sequences of complementary determining regions of an H chain V region and an L chain V region of a monoclonal antibody which is selected from the group consisting of monoclonal antibodies KM 2311, KM2582, KM2590, KM2591, and KM2604.

26. An antibody characterized in that said antibody according to one of claims 1 to 3, 10, 11, 13, 14, and 16 to 25 is combined with a radioactive isotope, a protein, or a low molecular agent by chemical or genetic engineering means.

27. A method for immunologically detecting a human telomerase catalytic subunit using the monoclonal antibody according to one of claims 1 to 3, 10, 11, 13, 14, and 16 to 26.

28. An immunological detecting method according to claim 27, wherein the method is Western blotting, immunohisto staining method, immunocyte staining method, or dot blotting.

29. A method for immunologically detecting a microorganism, an animal cell, or an insect cell which expresses a human telomerase catalytic subunit intracellularly or extracellularly, using the monoclonal antibody according to one of claims 1 to 3, 10, 11, 13, 14, and 16 to 26.
30. An immunological detecting method according to claim 29, wherein the method is Western blotting, immunohisto staining method, immunocyte staining method, or dot blotting.
31. A method for immunologically quantitating a human telomerase catalytic subunit using the monoclonal antibody according to one of claims 1 to 3, 10, 11, 13, 14, and 16 to 26.
32. An immunological quantitating method according to claim 31, wherein the method is fluorescent antibody method, enzyme-linked immunosorbent assay method (ELISA), radioimmunoassay (RIA), or sandwich ELISA method.
- ~~33. A method for immunologically quantitating a microorganism; an animal cell; or an insect cell which expresses a human telomerase catalytic subunit intracellularly or extracellularly, using the monoclonal antibody according to one of claims 1 to 3, 10, 11, 13, 14, and 16 to 26.~~
34. An immunological quantitating method according to claim 33, wherein the method is fluorescent antibody method, enzyme-linked immunosorbent assay method (ELISA), radioimmunoassay (RIA), or sandwich ELISA method.
35. A diagnosis method for diseases wherein telomerase is involved using the monoclonal antibody according to one of claims 1 to 3, 10, 11, 13, 14, and 16 to 26.
36. A diagnosis agent for diseases wherein telomerase is involved using the monoclonal antibody according to one of claims 1 to 3, 10, 11, 13, 14, and 16 to 26.
37. A therapeutic agent for diseases wherein telomerase is involved using the monoclonal antibody according to one of claims 1 to 3, 10, 11, 13, 14, and 16 to 26.